

WHAT IS CLAIMED IS:

1 1. A vehicle-based control system for use with a barrier
2 operating system comprising a motor for opening and closing a barrier, a receiver
3 in communication with the motor, and a remote transmitter for transmitting an
4 activation signal, the activation signal comprising a radio frequency carrier signal
5 modulated with a codeword, the activation signal for receipt by the receiver for use
6 in activating the motor to open and close the barrier, the control system comprising:
7 (a) a transceiver to be mounted in a vehicle and configured to
8 (1) receive a plurality of radio frequency carrier signals, and
9 (2) transmit an activation signal for receipt by the barrier
10 operating system receiver; and
11 (b) a controller to be mounted in a vehicle in communication with the
12 transceiver and a user input device, the controller configured to
13 (1) store the plurality of received radio frequency carrier
14 signals,
15 (2) receive user input identifying an activation scheme having
16 at least a variable codeword format associated therewith, and
17 (3) in response to user input,
18 (i) generate a variable codeword based on the identified
19 activation scheme,
20 (ii) select one of the plurality of stored carrier signals,
21 and
22 (iii) control the transceiver to transmit an activation
23 signal comprising the selected carrier signal modulated with the generated variable
24 codeword.

1 2. The system of claim 1 wherein
2 (a) the transceiver is further configured to receive an activation signal
3 from the barrier operating system transmitter, wherein the codeword of the received
4 activation signal is fixed, and
5 (b) the controller is further configured to
6 (1) store the fixed codeword of the received activation signal,

7 (2) sample the carrier signal of the received activation signal,
8 and
9 (3) control the transceiver to transmit an activation signal
10 comprising the sampled carrier signal modulated with the stored fixed codeword in
11 response to user input.

1 3. The control system of claim 1 wherein the controller is further
2 configured to receive an indication whether the activation signal transmitted by the
3 transceiver successfully operated the barrier operating system.

1 4. The control system of claim 1 wherein the plurality of carrier
2 signals are received by the transceiver and stored by the controller in a system set-
3 up mode.

1 5. The system of claim 1 wherein the user input device
2 comprises at least one button.

1 6. The system of claim 1 wherein the user input device
2 comprises a touch-screen display.

1 7. The system of claim 1 wherein the controller comprises a
2 digital radio frequency memory for use in storing the plurality of received radio
3 frequency carrier signals.

1 8. The system of claim 2 wherein the controller comprises a
2 digital radio frequency memory for use in sampling the carrier signal of the received
3 activation signal.

1 9. The system of claim 2 wherein the controller comprises a
2 digital radio frequency memory for use in storing the plurality of received radio
3 frequency carrier signals, and for use in sampling the carrier signal of the received
4 activation signal.

1 10. A vehicle-based control system for use with a barrier
2 operating system comprising a motor for opening and closing a barrier, a receiver
3 in communication with the motor, and a remote transmitter for transmitting an
4 activation signal, the activation signal comprising a radio frequency carrier signal
5 modulated with a fixed codeword, the activation signal for receipt by the receiver
6 for use in activating the motor to open and close the barrier, the control system
7 comprising:

8 (a) a transceiver to be mounted in a vehicle and configured to
9 (1) receive an activation signal from the barrier operating
10 system transmitter, and
11 (2) transmit an activation signal for receipt by the barrier
12 operating system receiver; and
13 (b) a controller to be mounted in a vehicle in communication with the
14 transceiver and a user input device, wherein the controller comprises a digital radio
15 frequency memory and is configured to
16 (1) store the fixed codeword of the received activation signal,
17 (2) sample the carrier signal of the received activation signal,
18 and
19 (3) control the transceiver to transmit an activation signal
20 comprising the sampled carrier signal modulated with the stored fixed codeword in
21 response to user input.

1 11. The system of claim 10 wherein the user input device
2 comprises at least one button.

1 12. The system of claim 10 wherein the user input device
2 comprises a touch-screen display.

1 13. A vehicle-based control method for use with a barrier
2 operating system comprising a motor for opening and closing a barrier, a receiver
3 in communication with the motor, and a remote transmitter for transmitting an
4 activation signal, the activation signal comprising a radio frequency carrier signal

5 modulated with a codeword, the activation signal for receipt by the receiver for use
6 in activating the motor to open and close the barrier, the control method comprising:
7 (a) identifying an activation scheme having at least a variable
8 codeword format associated therewith;
9 (b) generating a variable codeword based on the identified activation
10 scheme; and
11 (c) selecting one of a plurality of stored carrier signals, the selected
12 carrier signal and the generated variable codeword for use in transmitting an
13 activation signal.

1 14. The method of claim 13 further comprising transmitting an
2 activation signal comprising the selected carrier signal modulated with the generated
3 variable codeword.

1 15. The method of claim 13 further comprising:
2 (d) receiving the plurality of radio frequency carrier signals; and
3 (e) storing the plurality of received radio frequency carrier signals.

1 16. The method of claim 14 further comprising receiving an
2 indication whether the activation signal transmitted successfully operated the barrier
3 operating system.

1 17. The method of claim 13 further comprising:
2 (d) receiving an activation signal from the barrier operating system
3 transmitter, the received activation signal having a fixed codeword;
4 (e) storing the fixed codeword of the received activation signal; and
5 (f) sampling the carrier signal of the received activation signal, the
6 sampled carrier signal and the stored fixed codeword for use in transmitting an
7 activation signal.

1 18. The method of claim 17 further comprising transmitting an
2 activation signal comprising the sampled carrier signal modulated with the stored
3 fixed codeword.

1 19. The method of claim 15 wherein a digital radio frequency
2 memory is provided for use in storing the plurality of received radio frequency
3 carrier signals.

1 20. The method of claim 17 wherein a digital radio frequency
2 memory is provided for use in sampling the carrier signal of the received activation
3 signal.